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gressing, until from certain plants, as cinchona and poppy, at least twenty different alkaloids have been obtained.

The present monograph is a separate edition of Volume VIII. of 'Roscoe & Schorlemmer's Lehrbuch der organischen Chemie,' and treats of the plant alkaloids apart from the synthetic alkaloids and ptomaines. The author has divided this class of the alkaloids into certain fundamental groups, but has wisely not attempted to extend the classification further, having subdivided them according to the plants or families in which they occur. The main divisions are as follows: I. PYRROLIDIN GROUP, hygrine. II. PYRIDIN GROUP, trigonellin, piperin, chrysanthemin, nicotin, sparteine and cytisin, alkaloids of the Solanaceae, jaborandi, areca nut, conium, coca leaves and bark of the root of pomegranate. III. CHINOLIN GROUP, cinchona, strychnos and curare alkaloids. IV. ISOCHINOLIN GROUP, alkaloids of opium, hydrastis, berberis and corydalis. V. ALKALOIDS OF UNKNOWN CONSTITUTION as in ergot, Lycopodiaceae, Coniferae, Gnetaceae, Liliaceae, Apocynaceae, Aristolochiaceae, Buxaceae (Cactaceae), Lauraceae, Papilionaceae, Loganiaceae, Papaveraceae, Ranunculaceae, Rubiaceae, Rutaceae, and including glyco-alkaloids and other miscellaneous alkaloids.

Of the more than one hundred alkaloids, the constitution of only a comparatively few is known. In his treatment of these principles, Professor Brühl gives the following data concerning them: History, occurrence, preparation or method of isolation, physical and chemical properties and, wherever possible, the constitution, synthesis and the salts which have been studied.

Concerning the origin and purpose of the alkaloids in plant life, the author seems to agree with Guareschi that they are in the nature of waste products of the living protoplasm and that when once produced they are not again assimilated. It may be said, however, that this view is contrary to the recent researches of Barth, who has shown that in the seeds of *Datura stramonium* L. and *Conium maculatum* L. the alkaloids are located in the nucellus and that after germination they disappear. It would appear, therefore, that they, in some instances

at least, like the glucosides, are to be considered in the nature of reserve products. Then, too, the recent discovery of the glyco-alkaloids seems to favor this view.

The author has shown a masterly treatment of the chemistry of the plant alkaloids and the book is welcome as an important contribution to the subject; it is not only of special interest to the chemist and apothecary, but also to the physician, more particularly the therapist, as it is being shown that the constitution of chemical compounds has a more or less definite relation to physiological action.

HENRY KRAEMER.

PHILADELPHIA COLLEGE OF PHARMACY.

ENZYMES AND THEIR APPLICATION.*

A VOLUME of 217 pp., 8vo, has recently been added to l'Encyclopédie Scientifique des Aide-Mémoire, by M.-E. Pozzi-Escot, editor of the Revue Générale de Chimie pure et Appliquée, on the subject of enzymes and their application. The book is written, as the author states in the preface, for engineers and chemists, and not for biologists. The first part of the book, including nine chapters, deals with the general problems of enzymology, classification of enzymes, secretion, chemical composition, general properties, mode of action, etc. There are some statements in the text which physiologists at least could hardly accept as facts without more proof—for example, on p. 9, that enzymes are transformed vegetable albuminoids, or on p. 17, that enzymes are immortal, and on p. 50, that the secretion of diastase depends simply on the food furnished the cell, etc. The writer's use of the word diastase is also inconsistent. Following Duclaux he uses it most often as a general term equivalent to enzyme, but on pp. 42-43 it is used as equivalent to amylase. On p. 50 amylose is used when amylase was evidently intended, also rhamnose where rhamnase was intended (p. 28). Similar typographical errors are painfully numerous.

The second part of the book deals with enzymes in their industrial applications. This, like the first part of the book, is too briefly dealt

* 'Les Diastases et Leurs Application,' par M.-E. Pozzi-Escot. Gauthier-Villars-Masson et Cie., Paris, 1900.

with to make it valuable as a handbook, but the work will serve a good purpose in stimulating a desire on the part of the reader to know more of the subject and lead him to examine some of the more complete works.

ALBERT F. WOODS.

THE CYCLOPEDIA OF AMERICAN HORTICULTURE.*

It is scarcely a year since the first volume of Bailey and Miller's *Cyclopedia of American Horticulture* appeared. The third volume, bringing the work down to page 1486, has now come from the press, and there is reason to hope that the concluding volume will not be delayed much beyond the end of the summer. Considering the large number of persons who have written 'copy,' the many illustrations to be selected and prepared, and the extent of the work, this promptness of publication is not only deserving of commendation but quite remarkable.

What has been said of the quality of the earlier volumes (*SCIENCE*, June 1 and August 10, 1900) applies equally to the one now under consideration. Perhaps the general reader will be most interested in the excellent brief horticultural treatment of the States the names of which begin with N to P—therefore comprising most of the great horticultural States of the country—and of the Philippines and Porto Rico, and in the articles on parks, perfumery gardening, photography as applied to horticulture, physiology of plants, plant breeding, and the correct methods of potting and pruning plants. The most extensive botanical monographs are those of *Opuntia*, *Pinus*, *Populus*, *Prunus*, *Pyrus* and *Quercus*; and the most important horticultural monographs, aside from some of these, are those of the Orange, Peach, Pear, *Pelargonium*, Pecan and *Primula*.

T.

SOCIETIES AND ACADEMIES.

THE AMERICAN PHYSICAL SOCIETY.

At the meeting of the Society, held at Columbia University, on April 27th, Professor A. A.

* Bailey, L. H. and Miller, W. *Cyclopedia of American Horticulture*. N-Q. Pp. xv + 432. Pl. 11 + ff. 606. New York, 1901. The Macmillan Company. Price, \$5.00.

Michelson, of Chicago, was elected president to fill the vacancy caused by the death of Professor H. A. Rowland, and Professor A. G. Webster, of Clark University, was elected vice-president. The following resolution was adopted and made a part of the minutes:

The Physical Society desires to record its deep sense of sorrow for the death of its late president, Professor H. A. Rowland, and its appreciation of his services to science. By his brilliant researches he did much to advance our knowledge of physics, and by his work as a professor he stimulated many students to greater zeal for accurate scholarship and scientific investigation. His interest in the Society was shown from its beginning, and it owes much to the care with which he watched over the organization. By his death the Society, the science which it represents, and our country have sustained a loss which will be severely felt.

At the same meeting of the Physical Society Professor S. W. Stratton gave an account of the organization of the National Bureau of Standards which is to be established at Washington, and which, it is hoped, will prove of great value both to the scientific workers of the country and to manufacturers.

A paper by Mr. Bergen Davis on a 'New Phenomenon produced by Stationary Sound Waves' described some interesting quantitative experiments with organ pipes. The apparatus and methods employed by Mr. Davis gave results in close accord with what theory would predict, and they make it appear possible to bring the experimental study of these subjects on to an exact quantitative basis.

Mr. H. J. Hotchkiss presented a paper on the 'Counter E. M. F. of the Electric Arc,' giving an account of an experimental study of one phase of this much-discussed question. Mr. Hotchkiss employed an oscillograph, of a type which he has developed and used in numerous previous investigations, to determine whether the arc contains a counter electromotive force which lasts for an appreciable time after the current has been removed. The period of the needle of the oscillograph was about 1/5,000 of a second, and a study of the curves obtained by it has led Mr. Hotchkiss to the conclusion that if a counter electromotive force does exist, which lasts as long as a ten-thousandth of a second after the current is broken, then the